

Amendments to the Claims:

1. (currently amended) A method of transmitting a data packet on a communication path from a first communication node to a second communication node in a mobile network, where the second communication node is connected to the data network through at least one intermediary mobile router, the method comprising the steps of:

the second communication node determining a care-of route including a list of addresses of the at least one intermediary mobile router between said data network and said second communication node;

the second communication node sending a route message to the first communication node without any first communication node explicit request for said route message being received by the said second communication node from the first communication node, wherein said route message includes the care-of route;

the first communication node generating a preferred communication path in response to said care-of route received from said second communication node; and

the first communication node transmitting said at least one data packet from said first communication node to said second communication node via said preferred communication path.

2. (previously presented) The method of transmitting a data packet according to Claim 1, wherein said mobile network supports nested network mobility operation and said step of transmitting includes the step of:

routing said at least one data packet via a plurality of mobile routers identified by said intermediary addresses in said mobile network.

3. (previously presented) The method of transmitting a data packet according to Claim 1, wherein said mobile network operates in accordance with an IPv6 and/or IPv4 specification.

4. (previously presented) The method of transmitting a data packet according to Claim 1, wherein said first communication node is a correspondent node of the said second communication node and/or said second communication node is a mobile network node.

5. (previously presented) The method of transmitting a data packet according to Claim 1, the method further comprising the step of:  
sending a care-of route advertising message, by a plurality of communication nodes in the mobile network, that includes route information related to communication nodes attached to said second communication node, so that a communication path to an intended recipient can be determined.
6. (currently amended) The method of transmitting a data packet according to Claim 1, wherein said list of the plurality of intermediary addresses includes addresses of one or more mobile routers above the second communication node and includes a care-of address of the second communication node itself, if the second communication node is a mobile node, in a route hierarchy for delivering said data packet to an intended recipient.
7. (previously presented) The method of transmitting a data packet according to Claim 5, the method further comprising the step of:  
requesting transmission of one or more care-of route advertisement messages, containing route information of one or more IP addresses, from adjacent communication nodes when said second communication node moves to a new location within the mobile network.
8. (previously presented) The method of transmitting a data packet according to Claim 5, the method further comprising the steps of:  
extracting intermediary route messages from said route information in said care-of route advertising message at a communication node; and  
transmitting said intermediary route messages to communication nodes that the extracting communication node serves.
9. (previously presented) The method of transmitting a data packet according to Claim 8, the method further comprising the step of:  
appending a route message of the communication unit to said list of intermediary routes in said care-of route advertising message at said communication node.
10. (previously presented) The method of transmitting a data packet according to Claim 5 further comprising the step of:  
sending periodically said care-of route advertising message to all or a selected number of communication nodes in the mobile network.

11. (previously presented) The method of transmitting a data packet according to Claim 5, the method further comprising the step of:

    sending a mobile network prefix advertisement message by a mobile router at a top of a routing hierarchy in the mobile network to advertise said mobile network prefix; and

    determining by communication nodes in the same mobile network that they are located within the sending mobile router's mobile network.

12. (previously presented) The method of transmitting a data packet according to Claim 1, the method further comprising the step of:

    sending an extended binding update message containing route information only to communication nodes outside of the sending communication node's mobile network.

13-26. (canceled).

27. (currently amended) A data network including a first communication node for transmitting a data packet on a communication path from the first communication node to a second communication node, where the second communication node is in a mobile network connected to the data network through at least one intermediary mobile router, the data network comprising:

    the second communication node that determines a care-of route including a list of addresses of the at least one intermediary mobile router between said data network and said second communication node, and sends a route message to the first communication node without any first communication node explicit request for said route message being received from the first communication node, wherein said route message includes the care-of route; and

    the first communication node generates a preferred communication path in response to said care-of route received from said second communication node, and transmits said at least one data packet to said second communication node via said preferred communication path.

28. (currently amended) A method for building an extended binding cache for a data packet on a communication path from a first communication node to a second communication node in a mobile network, where the second communication node is connected to the data network through at least one intermediary mobile router, the method comprising the steps of:

determining, by the second communication node, a care-of route including a list of addresses of the at least one intermediary mobile router between said data network and said second communication node;

sending, by the second communication node, an extended binding update message to the first communication node without any first communication node explicit request for said update message being received by the said second communication node from the first communication node, wherein said update message includes the care-of route for messages to reach said second communication node;

receiving, from the second communication node, the extended binding update message indicating the intermediary addresses in the route for messages to reach said second communication node;

comparing said intermediary addresses of said extended binding update message with intermediary addresses, if any, of the first communication node's care-of route;

extracting at least one subsequent route of said second communication node, when said comparison fails to yield a match following previous route matches, thereby generating an extended binding cache entry indicating a preferred route to said second communication node; and

transmitting said data packet from said first communication node to said second communication node via said preferred route.

29. (previously presented) The method of transmitting a data packet according to Claim 1, wherein the sending step includes the second communication node sending the route message when it detects that a new communication is started with the first communication node.

30. (previously presented) The method of transmitting a data packet according to Claim 1, wherein the sending step includes the second communication node sending the route message when it decides to trigger route optimization for an ongoing communication with the first communication node.

31. (previously presented) The method of transmitting a data packet according to Claim 1, wherein the sending step includes the second communication node sending the route message when it detects that its care-of route has changed.

32. (previously presented) The method of transmitting a data packet according to Claim 31, wherein the care-of route has changed due to the IP mobility of one or more of its upper mobile routers connecting it to the data network.

33. (previously presented) The method of transmitting a data packet according to Claim 1, wherein the generating step generates the preferred communication path based on at least the care-of route received from the second communication node and a second care-of route relating to the first communication node that includes a list of mobile router addresses between the first communication node and the data network.